

Regulating the Intermittency of CdSe/ZnS Quantum Dots through Controlled Charge Transfer

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Quantum confined nanocrystals have been heavily studied due to their unique properties which can be potentially utilized in light harvesting, light emission or biological applications. However, intermittency or blinking of quantum dots (QDs) significantly affect the device performance; thus, controlling the intermittency behavior of QDs and understanding the mechanism behind are critically important. In this presentation, the intermittency of CdSe/ZnS quantum dot was studied by controlled charge transfer process. It was found that photoinduced electron transfer in QD-electron acceptor complex can significantly decrease probability of ON event, and photoinduced hole transfer in QD-hole acceptor complex can increase the probability of ON event. More importantly, it was also found that the size of QDs plays an important role on the process of charge transfer and intermittency behavior in these complexes. In summary, our studies indicate that the intermittency of CdSe/ZnS quantum dots can be regulated by controlled charge transfer.